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JHARKHAND STATE ELECTRICITY REGULATORY COMMISSION

JSERC (Rooftop Solar PV Grid Interactive Systems and Net/ Gross Metering) Regulations, 2015

Notification

The 10th November, 2015

CHAPTER I :

SCOPE, EXTENT AND DEFINITIONS

A1: SHORT TITLE, COMMENCEMENT AND EXTENT

No. 50

1.1 These Regulations shall be called “JSERC (Rooftop Solar PV Grid Interactive Systems and Net/Gross Metering) Regulations, 2015” (hereinafter referred to as RSPV Regulations, 2015;

- 1.2 These Regulations shall extend to the entire State of Jharkhand;
- 1.3 These Regulations shall come into force from the date of their publication in the Official Gazette of the Government of Jharkhand and unless reviewed earlier or extended by the Commission, shall remain in force up to 31st March, 2021.

A2: DEFINITIONS AND INTERPRETATION

- 2.1 In these Regulations, unless the context otherwise requires-
 - 1) **“Accuracy class index”** shall mean the index as specified in Central Electricity Authority (Installation & Operation of Meters) Regulations 2006 and subsequent amendments thereof;
 - 2) **“Act”** means the Electricity Act, 2003 (36 of 2003) and subsequent amendments thereof;
 - 3) **“Billing cycle” or “Billing period”** means the period for which electricity bills shall be prepared for different categories of consumers by the Licensee.
 - 4) **“Commission”** means the Jharkhand State Electricity Regulatory Commission constituted under the Act;
 - 5) **“Consumer”** means any person who is supplied with electricity for his own use by a Licensee or the Government or by any other person engaged in the business of supplying electricity to the public under the Act or any other law for the time being in force and includes any person whose premises are, for the time being, connected for the purpose of receiving electricity with the works of a Distribution Licensee, the Government or such other person, as the case may be;
 - 6) **“Contracted load” or “Contract demand”** means aggregate of the manufacturer’s rating of all energy consuming devices, in the consumer’s premises, which can be simultaneously used. In case manufacturer-rating plate is not available, the Licensee shall measure actual load of the device. This shall be expressed in KW, KVA or BHP units and shall be determined as per the procedure laid down by the Commission in the JSERC (Electricity Supply Code) Regulations 2005 and subsequent amendments thereof;
 - 7) **“Distribution Licensee” or “Licensee”** means a person granted a license under Section 14 of the Act authorizing him to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply;
 - 8) **“Electricity Supply Code”** means the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof;

- 9) **“Eligible consumer”** means a consumer of electricity in the area of supply of the Distribution Licensee, who uses or intends to use a grid connected rooftop Solar PV system installed in the consumer premises given that such systems can be self-owned or third party owned;
- 10) **“Financial year” or “Year”** means the period beginning from first of April in an English calendar year and ending with the thirty first of the March of the next year;
- 11) **“Gross Metering”** means the arrangement of measurement of energy in a system under which entire energy generated from rooftop solar PV system installed at eligible consumer premises is delivered to the distribution system of the Licensee;
- 12) **“Inter -Connection Agreement”** means the agreement entered into for connecting rooftop Solar PV system to the distribution system;
- 13) **“Interconnection point”** means the interface point of the Solar PV power generation facility with the distribution system of the Licensee. The interface point shall be the appropriate meter as per CEA (Installation and Operation of Meters), Regulations, 2006 and subsequent amendments thereof, installed at consumer’s premises or distribution substation;
- 14) **“Invoice”** means either a Monthly Bill / Supplementary Bill or a Monthly Invoice/ Supplementary Invoice raised by the Distribution Licensee
- 15) **“kWp”** means kilo Watt peak;
- 16) **“Net metering”** means an arrangement for measurement of energy in a system under which rooftop solar PV system installed at eligible consumer premises delivers surplus electricity, if any, to the Distribution Licensee after off-setting the electricity supplied by Distribution Licensee during the applicable billing period.
- 17) **“Obligated entity”** means the entity mandated under clause (e) of subsection (1) of section 86 of the Act to fulfill the renewable purchase obligation and identified under JSERC (Renewable Purchase Obligation and its Compliance) Regulations, 2010 and subsequent amendments thereof;
- 18) **“Premises”** means rooftops or/and elevated areas on the land, building or infrastructure or part or combination thereof in respect of which a separate meter or metering arrangements have been made by the Licensee for supply of electricity;
- 19) **“Rooftop solar PV system”** means the grid interactive solar photo voltaic power system installed on the rooftops/ground mounted or open land of consumer

premises that uses sunlight for direct conversion into electricity through photo voltaic technology;

20) **“Renewable Energy Certificate (REC)”** means the certificate issued in accordance with the procedures approved by the Central Electricity Regulatory Commission;

21) **“Renewable Energy Meter”** shall have the meaning as per definition assigned to it in the Central Electricity Authority (Installation and Operation of Meters) Amendment Regulations 2014 and subsequent amendments thereof;

22) **“Settlement period”** means the period beginning from first of April in an English calendar year and ending with the thirty first of the March of the next year;

23) **“Tariff order”** in respect of a Licensee means the most recent order issued by the Commission for that Licensee indicating the rates to be charged by the Licensee from various categories of consumers for supply of electrical energy and services;

24) **“Third party owner”** means a developer who is generating solar energy on a rooftop but does not own the rooftop but enters into a lease / commercial agreement with the rooftop owner. In case of gross metering arrangement owned by third party, he shall also enter into an agreement with the Distribution Licensee. However, if a consumer installs rooftop solar PV system in his premises through a third party and wishes to avail net metering facility, then only the eligible consumer shall enter into an agreement with the Licensee;

2.2 Words and expressions used but not defined in these Regulations shall have the meanings as assigned to those in the Act.

2.3 All proceedings under these Regulations shall be governed by the Conduct of Business Regulations of JSERC.

A3: SCOPE OF REGULATIONS AND EXTENT OF APPLICATION

3.1 These Regulations shall apply to the Distribution Licensees, the eligible consumers of the Distribution Licensees and third party owners of gross metering arrangement of rooftop solar PV system in the State of Jharkhand.

3.2 The eligible consumer may install the rooftop solar PV system under either gross metering arrangement or net metering arrangement which:

- i. Shall be within the permissible rated capacity as defined under these Regulations;
- ii. Shall be located in the premises of the consumer;

- iii. Shall interconnect and operate safely with the distribution system of the Licensee.
- 3.3 These Regulations do not preclude the right of the State authorities to undertake rooftop solar projects of 1 MWp and above capacity through alternative mechanisms.
- 3.4 Any consumer or third party owner claiming accelerated depreciation benefits on the rooftop solar PV system shall only be eligible to avail net metering arrangement under these Regulations.

A4: GENERAL PRINCIPLES

- 4.1 Subject to the limits and other terms and conditions specified in these Regulations, the eligible consumers of the Distribution Licensee shall be entitled to install rooftop solar PV system under either gross metering arrangement or net metering arrangement.
- 4.2 Provided that third party owners who have entered into a lease or commercial agreement for the rooftop in the premises of the eligible consumers, shall also be entitled to install rooftop solar PV system under gross metering arrangement with the Distribution Licensee, for such capacity which shall be cumulative of the prescribed limits of rooftop solar PV capacity for each eligible consumer whose rooftop has been leased by the third party owner.
- 4.3 Provided that the eligible consumer or third party owner as the case may be availing gross metering arrangement under these Regulations shall not be allowed to apply for net metering arrangement within the same premises.
- 4.4 Provided that the eligible consumer availing net metering arrangement under these Regulations shall not be allowed to apply for gross metering arrangement within the same premises.
- 4.5 Provided that the Distribution Licensee shall offer the provision of gross metering arrangement and net metering arrangement to the eligible consumer or third party owner as the case may be, who intends to install grid connected rooftop solar PV system, in its area of supply on non-discriminatory and first come first serve basis.
- 4.6 If the eligible consumer or third party owner installs solar rooftop system under the gross metering scheme, the entire power generated from such an installation shall be injected to the distribution system of the Licensee at the interconnection point.

- 4.7 If the eligible consumer installs solar rooftop system under the net metering scheme, such eligible consumer shall be entitled to use the power generated from the rooftop solar PV system at his premises. The surplus power can be injected to the distribution system of the Licensee at the interconnection point.

CHAPTER II:
FRAMEWORK AND GUIDING PRINCIPLES FOR NET METERING
AND GROSS METERING

A5: CAPACITY OF ROOFTOP PV SYSTEM

- 5.1 The maximum peak capacity of the grid connected rooftop solar PV system to be installed by any eligible consumer shall not exceed 100% of the sanctioned connected load / contract demand of the consumer.
- 5.2 The capacity of the grid connected rooftop solar PV system to be installed by any eligible consumer or third party owner shall be more than one kilo watt peak minimum.
- 5.3 Provided that the capacity of the grid connected rooftop solar PV system shall be in conformity with the provisions relating to the connected load or contract demand permissible under the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof.

A6: CAPACITY OF TRANSFORMER

- 6.1 The Distribution Licensee shall provide information on its website regarding capacity available on distribution transformer(s) for feeding the eligible consumer at different locations for connecting rooftop solar PV system within three months from the date of commencement of these Regulations, and shall update the same within one month of the start of the subsequent financial year under intimation to the Commission.
- 6.2 Provided that the capacity to be allowed in the area fed from the distribution transformer or any other transformer from which power is fed to the eligible consumer shall not exceed 15% or any other percentage as may be fixed by the Commission of the rated capacity of such transformer(s).
- 6.3 Provided further that in case of multiple applications from the consumers or third party owners fed by a transformer for participation in the scheme, the connectivity with the rooftop solar PV system shall be allowed on first come first serve basis.

CHAPTER III: **REGISTRATION OF THE PROJECT**

A7: PROCEDURE FOR APPLICATION AND REGISTRATION

7.1 The eligible consumer or third party owner hereinafter referred to as applicant who intends to install grid interactive rooftop solar PV system in his/her premises shall apply in the application form at Annexure- I of these Regulations along with the application fees as specified in Annexure-II of these Regulations. The Distribution Licensee shall make available all the forms on their website and local offices. For simplification of the system:

- i. Jharkhand Bijli Vitran Nigam Limited (JBVNL) shall prepare the procedure for net metering and gross metering arrangement in accordance with these Regulations, in consultation with Jharkhand Renewable Energy Development Agency (JREDA);
- ii. The list of documents needed for submission along with the application shall be defined by JBVNL in the procedural document;
- iii. All distribution licensees in Jharkhand shall adhere to the procedures framed by JBVNL and ask consumers for only those documents as listed by JBVNL;
- iv. Consumers shall submit the application to the Executive Engineer of the concerned Distribution Licensee along with a copy to JREDA officer in the district;
- v. All Distribution Licensees in Jharkhand shall provide a web link on their website for interested consumers to apply for net metering or gross metering online. There should be provision to fill the forms and upload necessary documents online. Necessary alert should be sent to concerned officer for action and consumer should be able to trace the status of his application processing.
- vi. JREDA shall take monthly progress from Distribution Licensees and submit quarterly progress to the Commission;

7.2 The Licensee shall acknowledge the receipt of the application form, register the application and shall process the application in the order of the receipt. The Licensee shall prepare a priority list having validity of one eighty (180) days on the basis of the order of such receipts. The priority list shall be prominently displayed in the local offices of the Licensee and shall also be uploaded on the website of the Licensee.

7.3 In order of priority, the Distribution Licensee shall complete the feasibility analysis for connecting the rooftop solar PV system to the distribution system within fifteen (15) days from the date of receipt of the application. The feasibility shall be valid for a period of one month unless extended by the Distribution Licensee. Provided that if the Distribution Licensee determines that an interconnection study is necessary, the Distribution Licensee shall intimate feasibility or otherwise within thirty (30) days from the receipt of the completed application.

7.4 While intimating the feasibility of the connection of the rooftop solar PV system as specified in Regulation 7.3, the Distribution Licensee shall also intimate the applicant:

- i. The details of documents to be submitted by the applicant;
- ii. Particulars of any deficiencies, if noticed, along with instructions to remove such defects.

Provided that if such deficiency is not removed within a period of thirty (30) days from date of receipt of intimation to such applicant, the application shall stand cancelled and the application fee shall be forfeited.

7.5 The Distribution Licensee shall on receipt of documents (if any) and removal of defects (if any), submitted under Regulation 7.4, inform the approval within ten (10) days from the date of receipt.

Provided that on feasibility analysis, if it is found that due to certain reasons including operational constraints it is not feasible for the Distribution Licensee to provide connectivity at all or up to the applied capacity i.e. connectivity is feasible for a reduced capacity, the Distribution Licensee shall specifically record the reasons thereof and, intimate in writing the same to the applicant(s) specifically mentioning that: the applicant has the option, to be exercised in writing, to

- i. either accept the connectivity for the reduced capacity and approach the Distribution Licensee to process the case;
- ii. or seek refund of its application fee either within seven (7) days of the receipt of the intimation;
- iii. or to stay in the priority list till its validity i.e. up to 180 (one hundred and eighty) days under clause 7.2 of these Regulations, for re-consideration and approval in case of future availability of applied capacity at the distribution transformer level etc. within such period.

Provided that if the applicant seeks refund, the Distribution Licensee shall refund the application fee within seven (7) days from the date of receipt of intimation from the applicant in this regard. Thereafter, the Distribution Licensee shall notify the updated position of the remnant applicants in the priority list.

Provided also that In case the applicant opts to stay in the priority list and even in the validity period of priority list of one hundred and eighty (180) days the required capacity does not get available, the Distribution Licensee shall refund the application fee on its own within seven (7) days of expiry of such 180 (one hundred and eighty) days period;

- 7.6 On receipt of approval of Distribution Licensee under Regulation 7.5, the applicant shall apply for registration of the scheme for rooftop solar PV system by completing the registration form provided at Annexure-III of these Regulations along with the registration fees as specified in Annexure-II of these Regulations.
- 7.7 At the time of submission of Registration Form, the Distribution Licensee shall perform preliminary checks of all the documents submitted along with the Registration Form in the presence of applicant or his representative, and if found complete, shall receive the form and acknowledge its receipt.
- 7.8 The Distribution Licensee shall provide written intimation to the applicant within seven (7) days from the date of receipt, deficiencies or additional documentation requirement (if any)
- 7.9 The applicant shall re-submit the Registration Form, along with the requisite documents, after curing the deficiencies contained therein within thirty (30) days of receipt of such intimation.
- 7.10 The Distribution Licensee within fifteen (15) days of receipt of completed Registration form:
 - i. register the scheme and assign a registration number if Registration Form is found complete and in order;
 - ii. give a personal hearing to the applicant and also intimate in writing the deficiencies, found if any, in the Registration Form and/or the documents submitted by the applicant giving him a final opportunity to cure the deficiencies and its re-submission.

7.11 The applicant within fifteen (15) days from such intimation shall cure the deficiencies and re-submit the Registration Form along with documents to the Distribution Licensee. If the Registration Form is found complete and in order, the Distribution Licensee shall register the scheme and assign a Registration Number to it. However, if it is observed that certain deficiencies still persist, the application for registration may be rejected.

Provided that in case the application for registration is rejected, the Distribution Licensee shall provide a written intimation to the applicant detailing reasons for rejection within fifteen (15) days of receipt of re-submitted Registration form.

Provided further that fifty (50%) of the registration fee shall be refunded to the eligible applicant within seven (7) days from issue of written intimation for rejection of application for Registration.

7.12 For the applicant who has applied under the gross metering scheme, the inter connection agreement provided at Annexure-V(A) of these Regulations shall be executed by the Distribution Licensee within fifteen (15) days of issue of Registration number to the eligible applicant.

7.13 For the applicant who has applied under the net metering scheme the inter connection agreement provided at Annexure-V(B) of these Regulations shall be executed by the Distribution Licensee within fifteen (15) days of issue of Registration number to the eligible applicant.

7.14 The applicant must execute the inter connection agreement and return it to the Distribution Licensee within fifteen (15) days from the date of receipt.

7.15 The Distribution Licensee and JREDA may set up demonstration models for net/ gross metering in their premises at selected locations within the State for encouraging consumers to opt for such models. They shall furnish more information on this aspect in their procedure for net and gross metering which shall be published post notification of these Regulations.

CHAPTER IV: **INTERCONNECTION SYSTEM**

A8: INTERCONNECTION WITH DISTRIBUTION SYSTEM

8.1 The interconnection of the rooftop solar PV system with the distribution system of the Distribution Licensee shall be made as per the technical specifications and standards for connectivity as specified by the Central Electricity Authority. The cost of interconnection of the rooftop solar PV system with the distribution system/ distribution mains shall be borne by the eligible consumer or third party owner, as the case may be. However, the cost of creating any LT/ HT line for connecting the plant to the inter connection point in distribution network shall be borne by the Licensee as per Jharkhand State Solar Power Policy 2015. Information related to technical & interconnection standards are given at Annexure IV of these Regulations. The Distribution Licensee shall ensure that:

- i. The interconnection of the rooftop solar PV system with the distribution system conforms to the specifications, standards and provisions as provided in the Central Electricity Authority (Technical Standards for connectivity of the Distributed Generation Resources) Regulations, 2013 as amended from time to time
- ii. The inter connection of the rooftop solar PV system with the distribution system of the Licensee confirms to the relevant provisions of the Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2010, as amended from time to time.
- iii. The interconnection of the rooftop solar PV system with the distribution system conforms to the specifications, standards and provisions as provided in the JSERC (Electricity Supply Code) Regulations, 2015 as amended from time to time.

Provided that in case of a conflict between these Regulations and the regulations specified under the JSERC (Electricity Supply Code) Regulations, 2015 as amended from time to time, these Regulations shall be applicable to the eligible consumers or third party owner as the case may be

- iv. Regulations and provisions framed under Section 53 of the Electricity Act 2003 and subsequent amendments thereof;

8.2 The connectivity levels at which the rooftop solar PV system shall be connected with the distribution system are as specified below:

S.No.	Connected Load / Contract Demand of Eligible Consumer	Connectivity Level
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S.No.	Connected Load / Contract Demand of Eligible Consumer	Connectivity Level
1.	Up to 5 kW	Single phase at 230 V
2.	5 kW and above up to 50 kW / 63 kVA	3 Phase, 4 wire at 415 V
3.	Above 50 kW and up to 1 MW	3 Phase at 6.6kV, 3 Phase at 11 kV

8.3 The eligible consumers using net metering arrangement are allowed to use a battery backup system in conjunction with their net metering system. A sample pictorial representation is given in Annexure VI for explanation purpose only.

Provided that where the rooftop solar system is installed with battery backup (full load backup/partial load backup), battery backup shall be restricted to the consumer's network and the inverter shall have separate backup wiring to prevent the battery/decentralized generation power to flow into the grid in the absence of grid supply and manual isolation switch shall also be provided.

8.4 The eligible consumer shall be responsible for safe operation, maintenance and rectification of any defect of the rooftop solar PV system up to the interconnection point beyond which the responsibility of safe operation, maintenance and rectification of any defect in the distribution system including the gross meter /net meter as the case may be shall rest with the Distribution Licensee.

8.5 The Distribution Licensee shall have the right to disconnect the rooftop solar PV system at any time in the event of possible threat/damage, from such rooftop solar PV system to its distribution system, to prevent an accident or damage. Subject to Regulation 8.4, the Distribution Licensee may call upon the eligible consumer to rectify the defect within a reasonable time.

A9: METERING ARRANGEMENT

9.1 All the meters shall adhere to the standards and provisions specified in CEA (Installation and Operation of Meters), Regulations, 2006 and subsequent amendments thereof.

9.2 The appropriate meter(s) shall be single phase or three phase as per requirement. All the meters to be installed shall be of the same or better Accuracy Class Index than the existing meter installed at the premises.

9.3 The appropriate meter(s) at the premises of the consumer shall be procured, installed and maintained by the Distribution Licensee at the cost of the eligible consumer. However if the eligible consumer wishes to procure the appropriate Meter(s), he may procure such meter(s) and present the same to the Distribution Licensee for testing and installation.

- 9.4 The location of appropriate meter(s) shall be in accordance with the CEA (Installation and Operation of Meters), Regulations, 2006 as amendments from time to time and the JSERC (Electricity Supply Code) Regulations, 2015 as amended from time to time.
- 9.5 The installation of check meters shall be mandatory for rooftop solar PV system having rated capacity more than 50 kWp. The charges for testing, installation and maintenance of the check meter shall be borne by the eligible consumer. The Distribution Licensee shall own the check meter.
- 9.6 For installations having rated capacity up to 50 kWp, the eligible consumer or the Distribution Licensee who so ever if desires, may install check meter at their own cost. The Distribution Licensee shall own the check meter.
- 9.7 The check meter shall be installed after the inverter of the solar rooftop system.
- 9.8 The specification and standards of the check meter shall be same as or better than the consumer meter installed at the premises of the eligible consumer.
- 9.9 All the meters installed shall be jointly inspected and sealed on behalf of both the parties.

Provided that the meter reading taken by the Distribution Licensee shall form the basis of commercial settlement.

CHAPTER IV: **ENERGY ACCOUNTING**

A10: ENERGY ACCOUNTING AND SETTLEMENT

- 10.1 Meter readings shall be taken as per the applicable cycle as provided in the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof;
- 10.2 The case of rooftop solar PV system under gross metering arrangement the Licensee shall undertake energy accounting and settlement with either the eligible consumer or the third party owner whosoever is a signatory of the interconnection agreement with the Licensee.
- 10.3 The energy accounting and settlement procedure for eligible consumers / third party owners installing and operating rooftop solar PV system under gross metering arrangement shall be as per the following procedure:
 - i. For each billing period, the Licensee shall show the quantum of electricity injected by the rooftop solar PV system installed at the premises of the eligible consumer in the billing period.
 - ii. The Distribution Licensee shall reimburse the eligible consumer or the third party owner as the case may be for the quantum of injected electricity by the rooftop solar PV system during the billing period by way of 'Solar Injection Compensation'.

Provided that the Solar Injection Compensation to be paid by the Distribution Licensee to the eligible consumer or third party owner as the case may be shall be determined on the basis of tariff for new Solar Grid connected PV projects approved by the Commission vide the JSERC (Determination of Tariff for Procurement of Power From Solar PV Power Project and Solar Thermal Power Project) Regulations, 2015 and subsequent amendments thereof or as determined by the Commission;
 - iii. Rebate and late payment surcharge on early or delayed payment of the Solar Injection Compensation as the case may be shall be levied in the same manner as per the procedure laid down by the Commission in the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof;

Provided that such rebates/ delayed payment surcharge as the case may be shall also be payable to the third party owner in the same manner as per procedure specified for the consumer of the Licensee in the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof;

- iv. There shall be no deemed generation charges payable to the eligible consumer or third party owner of the solar rooftop system.
- v. The Distribution Licensee shall be responsible for billing of the electricity injected by the rooftop solar PV system into the distribution system. The bills prepared by the distribution license shall necessarily include the following:
 - a) Quantum of electricity injected into the distribution system by the rooftop solar PV system.
 - b) Quantum of Solar Injection Compensation payable by the Licensee.

Provided that the billing period and due date of the bills shall be the same as that of the eligible consumer in whose premises the solar system has been installed.

Provided also that Licensee shall reimburse the eligible consumer or third party owner of the solar rooftop system as the case may be, within the due date of the electricity bill of the consumer in whose premises the rooftop solar PV system has been installed.

10.4 The energy accounting and settlement procedure for consumers installing and operating rooftop solar PV system under net metering arrangement shall be as per the following procedure:

- i. For each billing period, the Licensee shall show the quantum of electricity injected by the rooftop solar PV system in the billing period, supplied electricity by Distribution Licensee in the billing period, net billed electricity for payment by the consumer for that billing period and net carried over electricity to the next billing period separately;
- ii. If the electricity injected exceeds the electricity consumed during the billing period, such excess injected electricity shall be carried forward to next billing period as electricity credit and may be utilized to net electricity injected or consumed in future billing periods but within the settlement period;
- iii. If the electricity supplied by the Distribution Licensee during any billing period exceeds the electricity generated by the eligible consumer's rooftop solar PV system, the Distribution Licensee shall raise invoice for the net electricity consumption after taking into account any electricity credit balance remaining from previous billing periods;

Provided, in case the eligible customer is under the ambit of time of day tariff, as determined by the Commission from time to time, the electricity consumption in any time block (e.g., peak hours, off-peak hours, etc.) shall be first compensated with the electricity generation in the same time block. Any excess generation over consumption in any time block in a billing cycle shall be carried forward to the corresponding time block in the subsequent month for adjustment purpose.

Provided also that the excess electricity measured in kilo-watt hour may only be utilized to offset the consumption measured in kilo-watt hour and may not be utilized to compensate any other fee and charges imposed by the Distribution Licensee as per the instructions of Commission

Provided also at the end of each settlement period, any electricity credits, which remain unadjusted, shall be paid at a rate of Rs 0.50/kWh by the Distribution Licensee or as notified by the Commission from time to time.

Provide further that at the beginning of each settlement period, cumulative carried over electricity credits shall be reset to zero.

- iv. There shall be no deemed generation charges payable to the eligible consumer.
- v. In case the applicable tariff provides for billing on kVAh basis, the net drawl or injection of energy shall also be measured in kVAh.
- vi. When an eligible consumer leaves the system, that consumers unused electricity credits shall be paid at a rate of Rs 0.50/kWh by the Distribution Licensee or as notified by the Commission from time to time.
- vii. Regardless of availability of electricity credits with the eligible consumer during any billing period, the consumer shall continue to pay applicable charges such as fixed/ demand charges, Government levy etc.
- viii. The Distribution Licensee shall necessarily provide the following details along with the electricity bill relating to each billing period:
 - a) Quantum of electricity generated from the rooftop solar PV system.
 - b) Quantum of electricity injected into the distribution system by the rooftop solar PV system.
 - c) Quantum of electricity supplied by the Distribution Licensee to the eligible consumer.

- d) Quantum of net electricity that has been billed for payment by the eligible consumer.
- e) Quantum of electricity credits available to the eligible consumer which is carried over from the previous billing period.
- f) Quantum of electricity injected into the distribution system in excess of the drawl by the eligible consumer (quantum of electricity credits) which shall be carried forward to the next billing period.

10.5 In case of any dispute in billing it would be settled by the Consumer Grievance Redressal Forum and if issue still remains unresolved, it shall be settled by the Ombudsman following appropriate procedure.

A11: APPLICABILITY OF OTHER CHARGES

- 11.1 In rooftop solar PV system under gross metering scheme / net metering scheme, whether self-owned or third party owned and installed on eligible consumer premises shall be exempted from wheeling and cross subsidy surcharge

CHAPTER IV:
MISCELLANEOUS

A12: SOLAR RENEWABLE PURCHASE OBLIGATION

- 12.1 In case of gross metering scheme the quantum of electricity generation by eligible consumer, who is not defined as Obligated entity, from the rooftop solar PV system shall qualify towards compliance of Renewable Purchase Obligation (RPO) for the Distribution Licensee in whose area of supply the eligible consumer is located.
- 12.2 In case of net metering scheme the total quantum of solar electricity generated under the net metering arrangement for eligible consumer, who is not defined as Obligated entity, shall qualify towards deemed Renewable Purchase Obligation (RPO) for the Distribution Licensee in whose area of supply the eligible consumer is located.

A13: ELIGIBILITY TO PARTICIPATE UNDER RENEWABLE ENERGY CERTIFICATE MECHANISM

- 13.1 Nothing contained in these Regulations shall apply to the Solar PV generator intending to sell power under the Renewable Energy Certificate Mechanism and he shall be free to sell power under such mechanism as per the provisions of Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 and subsequent amendments thereof and JSERC (Promotion of Green Energy through Renewable Purchase Obligation) Regulations, 2010 and subsequent amendments thereof.
- 13.2 The eligibility for Renewable Energy Certificate and issuance of such renewable energy certificate shall be as per the eligibility criteria specified under Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 and subsequent amendments thereof.

A14: PENALTY OR COMPENSATION

- 14.1 In case of failure of gross metering or net metering system as the case may be, the provisions of penalty or compensation shall be as per the provisions of the provided in the JSERC (Electricity Supply Code) Regulations 2015 and subsequent amendments thereof or as determined by the Commission from time to time.

A15: POWER TO GIVE DIRECTIONS

15.1 The Commission may from time to time issue such directions and orders as considered appropriate for the implementation of these Regulations.

A16: POWER TO RELAX

16.1 The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

A17: POWER TO AMEND

17.1 The Commission may from time to time add, vary, alter, suspend, modify, amend or repeal any provisions of these Regulations.

By order of the Commission,

A.K.Mehta,
Secretary.

Jharkhand State Electricity Regulatory Commission

Annexure-I: Depreciation Schedule

Application Form Number

APPLICATION FOR INTENT TO SEEK CONNECTIVITY OF ROOFTOP SOLAR PV SYSTEM

1.	Name Full Address of Consumer / Applicant	
2.	Consumer No. (CA. No.) (Owner of the premises)	
3.	Category (Domestic / Non Domestic/Commercial etc. specify) (Owner of the premises)	
4.	Telephone No	Res: Mob:
5.	E-mail address	
6.	Sanctioned Load	
7.	Capacity of Rooftop Solar PV System proposed to be connected	
8.	Whether the Consumer is under ToD billing system (Owner of the premises)	Yes/No
9.	Whether the Consumer or third party owner shall avail accelerated depreciation benefits on the Rooftop Solar PV system	Yes/No
10.	Type of Rooftop Solar PV System proposed (Gross/Net metering)	
11.	Location and address of Proposed Rooftop Solar PV System (roof top, ground mounted, any other – specify)	
12.	Preferred mode of Communication (Post/ By Hand/ Electronic etc. – specify)	

Place:

Signature of Eligible Consumer/Third Party owner

ACKNOWLEDGEMENT

Application Number

Received the application for connectivity of Rooftop Solar PV System

Name: CA.
No.:

Date, Time, Serial No.
.....

Application Fee Paid or Not:
.....

Rooftop Solar PV Plant Capacity:
.....

Mode of payment (Cheque / DD/RTGS/NEFT):

Details of Cheque /DD/RTGS/NEFT:
.....

Name of Officer **Signature**
Seal **(Designation** **of**
Officer)
(To be specified at the time of
signing)

Annexure-II: Fee structure

APPLICATION FEES

S.No.	Connected Load / Contract Demand of Eligible Consumer	Amount
1.	Up to 50 kW / 63 kVA	Rs 250
2.	Above 50 kW and up to 1 MW	Rs 750

The amount of application fee for eligible consumer and third party other than the owner of the premises shall be the amount mentioned above.

REGISTRATION FEES

S.No.	Connected Load / Contract Demand of Eligible Consumer	Amount
1.	Up to 50 kW / 63 kVA	Rs 1000
2.	Above 50 kW and up to 1 MW	Rs 2500

The amount of registration fee for eligible consumer and third party other than the owner of the premises shall be the amount mentioned above.

**Annexure -III: APPLICATION FOR REGISTRATION OF THE SCHEME FOR
ROOFTOP SOLAR PV SYSTEM**

1.	Name	
2.	Address for Communication	
3.	Consumer No.,	
4.	Telephone No.,	
5.	E-Mail	
6.	Application No.	
7.	Serial No. of receipt of Application	
8.	Contract Demand of Consumer	
9.	Capacity of Rooftop Solar PV System to be connected (Capacity not to exceed as approved by the Distribution Licensee and as per RSPV Regulations 2015)	
10.	Technical specifications and other particulars of Renewable Panel, Grid Tied Inverter and Interlocking System etc. proposed to be installed – whether attached (Yes/No)	
11.	Technical specifications and other particulars of Renewable energy meter to be installed – whether attached (Yes/No)	
12.	Whether Consumer opts to purchase meter himself or from Distribution Licensee	
13.	Drawings for installing the Rooftop Solar PV System – whether attached (Yes/No)	
14.	Proposed date of completion of the installation	

Place:
Owner

Signature of Eligible Consumer/ Third Party

ACKNOWLEDGEMENT

Received the application for registration of the scheme for Rooftop Solar PV System

Name:

.....

Date:

.....

Registration Number:

.....

Consumer Number

.....

Solar Energy Plant Capacity:

.....

Mode of payment (Cheque / DD/RTGS/NEFT):

.....

Details of Cheque/DD/RTGS/NEFT:

.....

Name of Officer

Signature

Seal

(Designation of Officer)

Annexure -IV: INFORMATION RELATED TO TECHNICAL & INTERCONNECTION STANDARDS

Parameter	Reference	Requirement
Overall conditions of Service	State Electricity Supply Code	Reference to State Electricity Distribution Code
Overall Grid Standards	Central Electricity Authority (Grid Standard) Regulations 2010	Reference to regulations
Equipment	BIS/IEC/IEEE	Reference to standards
Meters	Central Electricity Authority (Installation & operation of meters) Regulation 2006	Reference to regulations and additional conditions issued by the Commission.
Safety and supply	Central Electricity Authority (measures of safety and electricity supply) Regulations, 2010	Reference to regulations
Harmonic Current	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519
Synchronization	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Rooftop Solar PV System must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection.
Voltage	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The voltage operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the Rooftop Solar PV System must isolate itself from the grid.
Flicker	IEEE 519 CEA (Technical Standards for	Operation of Rooftop Solar PV System should not cause voltage

Parameter	Reference	Requirement
	Connectivity of the Distributed Generation Resources) Regulations 2013	flicker in excess of the limits stated in IEC 61000 standards or other equivalent Indian standards, if any.
Frequency	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds.
DC injection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Rooftop Solar PV System should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
Power Factor	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate.
Islanding and Disconnection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The Rooftop Solar PV System in the event of fault, voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
Paralleling Device	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed	Paralleling device of Rooftop Solar PV System shall be capable of withstanding 220% of the normal voltage at the

Parameter	Reference	Requirement
	Generation Resources) Regulations 2013	interconnection point.

Annexure-V (A) Inter connection agreement (Gross Metering Arrangement)

This Agreement is made and entered into at (location)on this (date)day of (month)yearbetween

The Eligible Consumer or third party owner, by the name ofowning or leasing or having commerce rights to the premises at (address)as first party

AND

Distribution Licensee (herein after called as Licensee) and represented by(Designation of office) and having its registered office at (address)as second party of the agreement

And whereas, the(Name of the Licensee) agrees to provide grid connectivity to the eligible consumer for injection of the electricity generated from his SPV plant of capacitykilowatts into the power system of Licensee and as per conditions of this agreement and net- metering regulations/orders issued by the Jharkhand State Electricity Regulatory Commission.

Both the parties hereby agree to as follows:

1. Eligibility

1.1. Eligibility for gross metering arrangement has been specified in the JSERC (Rooftop Solar PV Grid Interactive System Gross / Net Metering) Regulations, 2015 (hereinafter referred to as RSPV Regulations, 2015). Eligible consumer or third party owner is required to be aware, in advance, of the standards and conditions his system has to meet for being integrated into grid/distribution system.

2. Technical and Interconnection Requirements

2.1. The First Party agrees that his Rooftop Solar PV generation plant gross metering system will conform to the standards and requirements specified in these regulations and in the following Regulations and codes as amended from time to time.

- i. Central Electricity Authority (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013 and subsequent amendments thereof;
- ii. Central Electricity Authority (Installation and Operation of Meters) Regulation 2006 and subsequent amendments thereof;
- iii. Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 and subsequent amendments thereof;
- iv. JSERC State Grid Code Regulations, 2008 and subsequent amendments thereof to the extent specified in the JSERC RSPV Regulations 2015;
- v. JSERC Electricity Supply Code Regulations 2005 and subsequent amendments thereof;
- vi. Any other provisions applicable to the electricity consumer of the Distribution Licensee.

- 2.2. First Party agrees that he has installed or will install, prior to connection of Photovoltaic system to Licensee's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the Licensee to have access to and operation of this, if required and for repair & maintenance of the distribution system.
- 2.3. First Party agrees that in case of a power outage Licensee's system, photovoltaic system will disconnect/isolate automatically and his plant will not inject power into Licensee's distribution system.
- 2.4. All the equipment connected to distribution system shall be compliant with relevant International (IEEE/IEC) or Indian standards (BIS) and installations of electrical equipment must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010.
- 2.5. First Party agrees that Licensee will specify the interface/interconnection point and metering point.
- 2.6. First Party and Second Party agree to comply with the relevant CEA and JSERC Regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage, frequency, flicker etc.
- 2.7. Due to Licensee's obligation to maintain a safe and reliable distribution system, First Party agrees that if it is determined by the Licensee that the respective owner's photovoltaic system either causes damage to and/or produces adverse effects affecting other consumers or Licensee's assets, First Party will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Licensee and correct the problem at his own expense prior to a reconnection.

3. Clearances and Approvals

- 3.1. The First Party agrees to obtain all the necessary approvals and clearances (environmental and grid connection related) before connecting the photovoltaic system to the distribution system.

4. Access and Disconnection

- 4.1. Licensee shall have access to metering equipment and disconnecting means of the solar photovoltaic system, both automatic and manual, at all times.
- 4.2. In emergency or outage situation, where there is no access to the disconnecting means, both automatic and manual, such as a switch or breaker, Licensee may disconnect service to the premises of the eligible consumer.

5. Liabilities

- 5.1. Eligible consumer and Licensee will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Licensee's distribution system.
- 5.2. Licensee and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.
- 5.3. Licensee shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the Central/State Government beyond the scope specified by the Commission in its relevant Order

5.4. The Licensee may consider the quantum of electricity generation from the Rooftop Solar PV system towards RPO.

6. Commercial Settlement

6.1. All the commercial settlement under this agreement shall follow the RSPV Regulations, 2015 issued by the JSERC.

7. Connection Costs

7.1. The First Party shall bear all costs related to setting up of photovoltaic system including metering and interconnection costs. The First Party agrees to pay the actual cost of modifications and upgrades to the service line required to connect photovoltaic system to the grid in case it is required.

8. Termination

8.1. The First Party can terminate agreement at any time by providing Licensee with 90 days prior notice.

8.2. Licensee has the right to terminate Agreement on 30 days prior written notice, if First Party commits breach of any of the term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Licensee of the breach.

8.3. First Party shall upon termination of this Agreement, disconnect the photovoltaic system from Licensee's distribution system in a timely manner and to Licensee's satisfaction.

In witness, whereof, Mr. for and on behalf of (Eligible consumer or third party owner) and Mr. for and on behalf of (Licensee) sign this agreement in two originals.

Eligible Consumer/ Third Party

Name

Address

Service connection No.

Distribution Licensee

Name

Designation

Office Address

Annexure-V (B) Inter connection agreement (Net Metering Arrangement)

This Agreement is made and entered into at (location)on this (date)day of (month)yearbetween

The Eligible Consumer by the name ofhaving or leasing the premises at (address)as first party

AND

Distribution Licensee (herein after called as Licensee) and represented by (Designation of office) and having its registered office at (address) as second party of the agreement

And whereas, the (Name of the Licensee) agrees to provide grid connectivity to the eligible consumer for injection of the electricity generated from his SPV plant of capacity kilowatts into the power system of Licensee and as per conditions of this agreement and net- metering regulations/orders issued by the Jharkhand State Electricity Regulatory Commission.

Both the parties hereby agree to as follows:

1. Eligibility

1.1. Eligibility for net-metering has been specified in the JSERC (Rooftop Solar PV Grid Interactive System Gross / Net Metering) Regulations, 2015 (hereinafter referred to as RSPV Regulations, 2015). Eligible consumer is required to be aware, in advance, of the standards and conditions his system has to meet for being integrated into grid/distribution system.

2. Technical and Interconnection Requirements

2.1. The eligible consumer agrees that his Rooftop Solar PV generation plant and net metering system will conform to the standards and requirements specified in these regulations and in the following Regulations and codes as amended from time to time.

- i. Central Electricity Authority (Technical Standards for connectivity of the Distributed Generating Resources) Regulations, 2013 and subsequent amendments thereof;
- ii. Central Electricity Authority (Installation and Operation of Meters) Regulation 2006 and subsequent amendments thereof;
- iii. Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010 and subsequent amendments thereof;
- iv. JSERC State Grid Code, 2008 and subsequent amendments thereof to the extent specified in the JSERC RSPV Regulations 2015;
- v. JSERC Supply Code Regulations 2005 and subsequent amendments thereof;
- vi. Any other provisions applicable to the electricity consumer of the Distribution Licensee.

- 2.2. Eligible consumer agrees that he has installed or will install, prior to connection of Photovoltaic system to Licensee's distribution system, an isolation device (both automatic and inbuilt within inverter and external manual relays) and agrees for the Licensee to have access to and operation of this, if required and for repair & maintenance of the distribution system.
- 2.3. Eligible consumer agrees that in case of a power outage on Licensee's system, photovoltaic system will disconnect/isolate automatically and his plant will not inject power into Licensee's distribution system.
- 2.4. All the equipment connected to distribution system shall be compliant with relevant International (IEEE/IEC) or Indian standards (BIS) and installations of electrical equipment must comply with Central Electricity Authority (Measures of Safety and Electricity Supply) Regulations, 2010.
- 2.5. Eligible consumer agrees that Licensee will specify the interface/interconnection point and metering point.
- 2.6. Eligible consumer and Licensee agree to comply with the relevant CEA and JSERC Regulations in respect of operation and maintenance of the plant, drawing and diagrams, site responsibility schedule, harmonics, synchronization, voltage, frequency, flicker etc.
- 2.7. Due to Licensee's obligation to maintain a safe and reliable distribution system, eligible consumer agrees that if it is determined by the Licensee that eligible consumer's photovoltaic system either causes damage to and/or produces adverse effects affecting other consumers or Licensee's assets, eligible consumer will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Licensee and correct the problem at his own expense prior to a reconnection.

3. Clearances and Approvals

- 3.1. The eligible consumer agrees to obtain all the necessary approvals and clearances (environmental and grid connection related) before connecting the photovoltaic system to the distribution system.

4. Access and Disconnection

- 4.1. Licensee shall have access to metering equipment and disconnecting means of the solar photovoltaic system, both automatic and manual, at all times.
- 4.2. In emergency or outage situation, where there is no access to the disconnecting means, both automatic and manual, such as a switch or breaker, Licensee may disconnect service to the premises of the eligible consumer.

5. Liabilities

- 5.1. Eligible consumer and Licensee will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Licensee's distribution system.
- 5.2. Licensee and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.
- 5.3. Licensee shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the Central/State Government beyond the scope specified by the Commission in its relevant Order

5.4. The Licensee may consider the quantum of electricity generation from the Rooftop Solar PV system towards RPO.

6. Commercial Settlement

6.1. All the commercial settlement under this agreement shall follow the RSPV Regulations, 2015 issued by the JSERC.

7. Connection Costs

7.1. The eligible consumer shall bear all costs related to setting up of photovoltaic system including metering and interconnection costs. The eligible consumer agrees to pay the actual cost of modifications and upgrades to the service line required to connect photovoltaic system to the grid in case it is required.

8. Termination

8.1. The eligible consumer can terminate agreement at any time by providing Licensee with 90 days prior notice.

8.2. Licensee has the right to terminate Agreement on 30 days prior written notice, if eligible consumer commits breach of any of the term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Licensee of the breach.

8.3. Eligible consumer shall upon termination of this Agreement, disconnect the photovoltaic system from Licensee's distribution system in a timely manner and to Licensee's satisfaction.

In witness, whereof, Mr. for and on behalf of (Eligible consumer) and Mr. for and on behalf of (Licensee) sign this agreement in two originals.

Eligible Consumer

Name

Address

Service connection No.

Distribution Licensee

Name

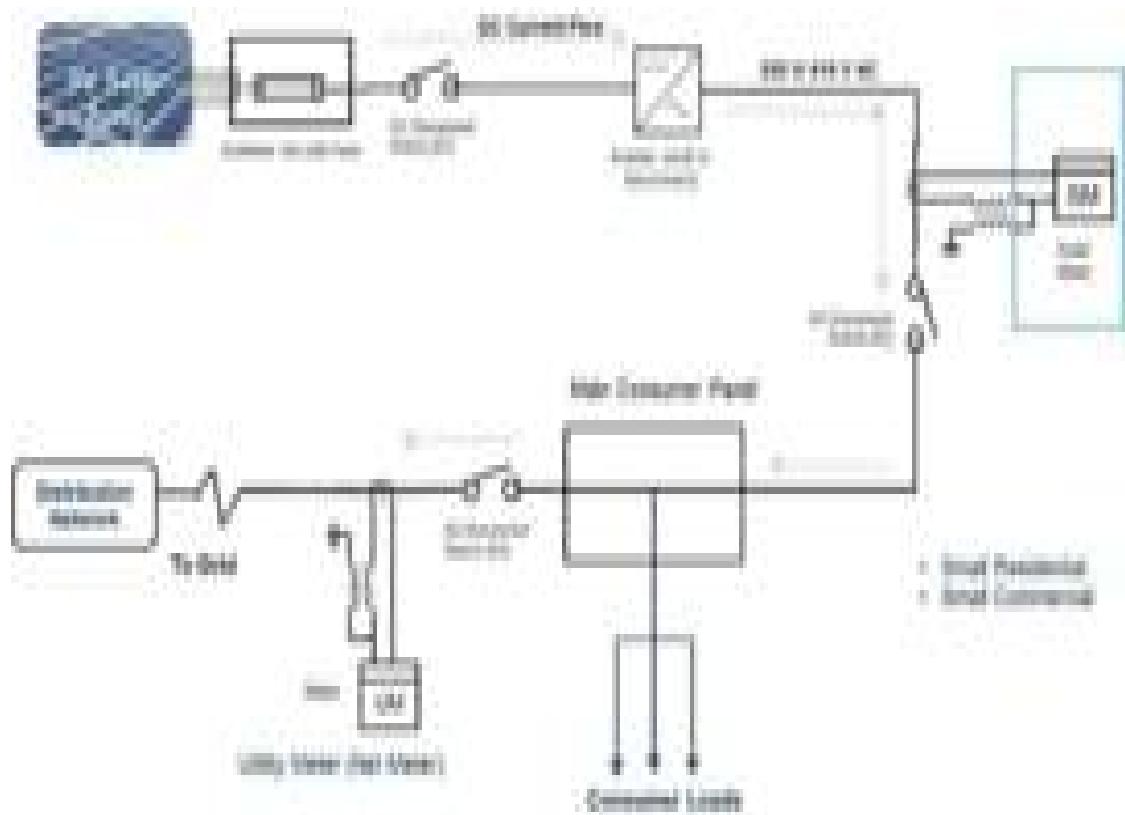
Designation

Office Address

Annexure-VI Net metering arrangement

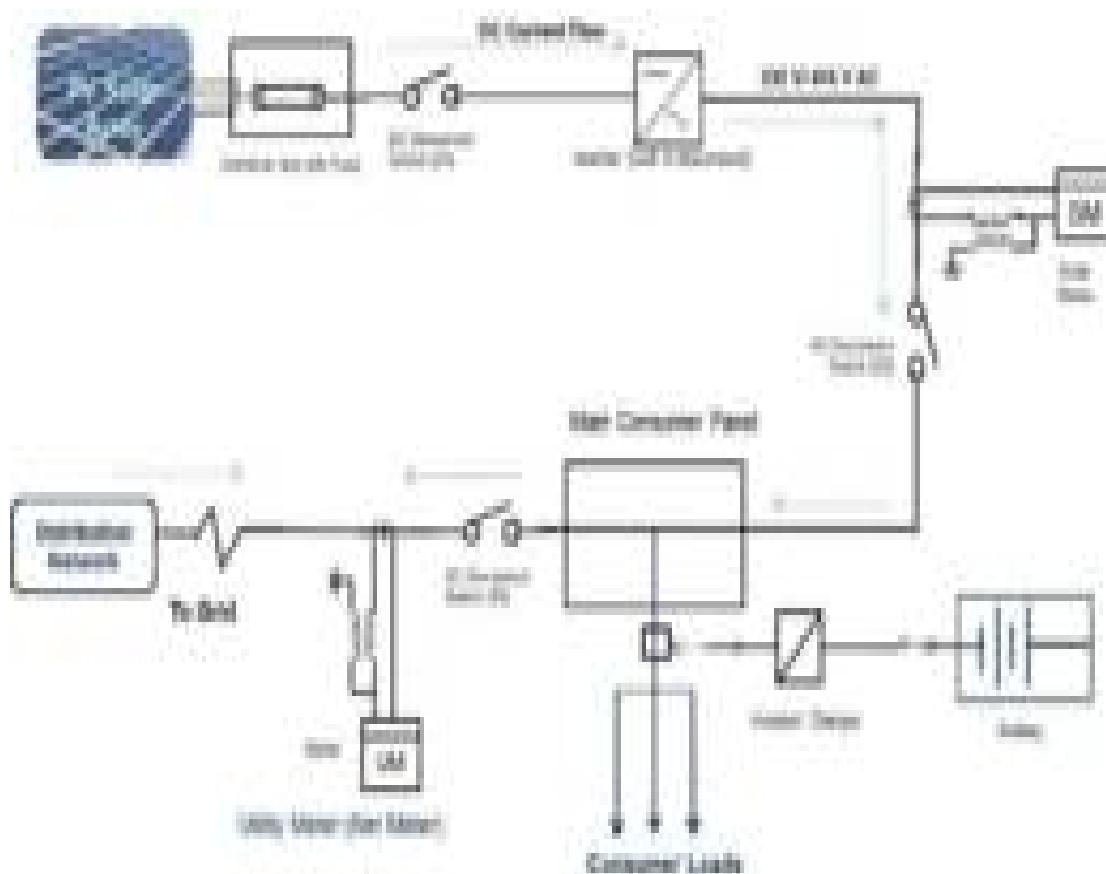
i. Two meter Configuration without Storage

The metering protocol for 'Grid connected rooftop Solar PV system without storage' and location of solar meter and consumer meter shall be in accordance with the schematic below:



ii. Two meter configuration with Storage

The metering protocol for 'Grid connected rooftop solar PV system with storage' and location of Solar Meter (SM) and Utility/ Net Meter (NM) shall be in accordance with the schematic below:



**By order of the Commission
(A.K. Mehta)
Secretary
Jharkhand State Electricity Regulatory Commission**
